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## STUDIES IN THE ORBWEAVING SPIDERS (ARGIOPIDAE). 2

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### INTRODUCTION

This is the second paper in a series with the above title in which the orbweaving spiders of the family Argiopidae are treated (see American Museum Novitates, no. 1487, 1951). The material studied was the very large collection in the American Museum of Natural History, which is rich in American and exotic members of the family, and the collection of the author at the Alabama Museum of Natural History, University, Alabama. All the types and the majority of the specimens listed are deposited in the American Museum of Natural History. The author acknowledges with great pleasure the numerous courtesies extended him by the Department of Insects and Spiders of this institution and the generosity of the Council of the Scientific Staff in making available a grant for summer study. The author further proffers his thanks to Dr. Walter B. Jones, Director of the Alabama Museum, for much aid and to Dr. Willis J. Gertsch of the American Museum for much encouragement and advice.

The present paper is concerned entirely with the subfamily Araneinae. A survey was made with the aim of clarifying the generic limits for several poorly known groups and defining the genera on the basis of genitalic characters as well as other pertinent features. Several new generic names are proposed for series which have heretofore been regarded as species groups. The new genera *Conarana* and *Conepeira* are given quite full

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analysis with the addition of numerous new species. Illustrations of the palpi and epigyna, all prepared by the author, are given of many poorly known species.

#### SYSTEMATIC SECTION

#### CAMBRIDGEPEIRA, NEW GENUS

Median apophysis of male palpus wider to much wider than high, transverse to only moderately so, and subtriangular; base wide and closely applied to tegular rim; one to two spurs on endal side arising from a stout convex portion of the main body; ectal corner low, irregular. Conductor short, wide under tip of tapering, flattened, curved embolus; tip of embolus single, acute or multifid. Terminal apophysis parallel with embolus, flattened, tapering, curved; tip subacute or bifid. Cymbium weakly, if at all, spinose; paracymbium as usual. A basal cone on femur of male palpus. Patella of palpus having a pair of apical spines. An apical retrolateral spur on coxa I. Spur-like spines on tibiae I and II. Tibia II incrassate or else very weakly so. Ventral femoral spines present in one or two rows. Epigynum having a scape of uniform width except for somewhat expanded tip; atriolar plates not projecting outward; rims bordering atriolar rims tending to form anterior convex bodies; atriolar structure bordered by single or double rims, tending to reduce to commissures with or without a pair of pits on the caudal (posterior) margin. Carapace not pilose; a spine or two on the cephalon near the eyes. Abdomen broadly ovate, lacking shoulder angles. A proximal, prolateral node on trochanters III and IV of male. Tibiae and metatarsi of legs I and II having anterior and prolateral spines medium to long as in *Conepeira* (*q.v.*), regularly spaced or in crowded series. Legs dissimilar.

GENOTYPE: *Cambridgepeira detrimentosa* (O. P. Cambridge), figures 8, 9, and 10.

The epigynum of the genotype is illustrated in figure 8 from a specimen from Dauphin Island, Mobile County, Alabama, and the median apophysis, shown in figure 10, is based on a specimen from Gulf Shores, Baldwin County, Alabama. The shape of the abdomen of the genotype, from Jordanton, Texas, is shown in figure 9, and its anterior portion is produced as in some Thomisidae. This feature is not so noticeable in other species of

*Cambridgepeira* that have been studied, all from South America. These latter seem to constitute a distinct species group or subgenus, since the legs of the females have proportionately shorter spines, and tibia II of the males is incrassate. In *C. lathyrina* (Holmberg) (fig. 7), the median apophysis of the male palpus has a pair of very short endal spurs arising from a neck-like extension of the weakly subtriangular main piece. *Cambridgepeira uniformis* (Keyserling) is a very pale species (in alcohol), and its median apophysis a transverse bar with a long, suberect pair of spurs whose tips incline slightly endally. In both species all pairs of legs have ventral femoral spines in a row or two, whereas in the genotype only leg IV has these spines. Mello-Leitao placed *C. lathyrina* in *Neosconella* in his catalog of Argentine spiders (1933, Arch. Esc. Sup. Agr. Med. Veter., Rio de Janeiro, vol. 10, no. 1, p. 41), but this genus is distinct in genitalia as well as in other respects. The abdomen is not elevated dorsally as can be seen at a glance in comparing *Neosconella*, the abdomen of which is high and rounded. Spiders of the genus *Cambridgepeira* make an open nest quite unlike the closed structure made by the other genus in question, and this nest is located at an upper corner of the usual formal web. It inhabits cactus thickets, *Quercus geminata* and yaupon in thickets, and is also found on the borders of hammock woods as well as on the outside and inside of buildings. The egg sacs are white wafers placed on leaves or in corners of buildings, usually outside of the nest.

#### ARANIELLA CHAMBERLIN AND IVIE, 1942

Median apophysis of male palpus roughly lens-shaped, wider than high; the base wide; a subacute endal angle with sides converging to form a tip; a prone apical denticle present or absent. Conductor lobate. Embolus linear, with acute tip. Terminal apophysis exactly like embolus. Cymbium not spinose. A pair of distal patellar spines present on the male palpus. Tibia II undifferentiated. Epigynum having a short, thick scape, the spade-like tip as wide as, or narrower than, the base; atriolum prominent underneath the scape and with curved, thick rims around the atriolar openings, the latter being forward and high up; atriolar rims sometimes lobate anteriorly, and commissure between them lobate or bilobate. Carapace not pilose; spines, as many as four pairs, on the cephalon of the

male. One row of ventral femoral spines on all legs of the male. Legs of the female similar.

GENOTYPE: *Araniella displicata* (Hentz), figure 5.

The characteristic median apophysis of the male palpus is shown in figure 5. It should be pointed out that *Epeira sex-punctata* Keyserling (1884, Die Spinnen Amerikas, p. 530, pl. 13, figs. 28-28a) is a synonym of this species. The epigynum of the European *A. cucurbitina* (Walckenaer), drawn from a female from Basel, Switzerland, is illustrated in figure 1.

### GIBBARANEA, NEW GENUS

Median apophysis of the male palpus transverse, somewhat naviculate; a stout upcurved endal spur; ectal end blunt, platform-like or irregularly lobate. Embolus a very short spur alongside a similar terminal apophysis. Conductor an irregular flap closely appressed to the low apical region of the genital bulb. Cymbium not spinose. A cone on the base of the femur of the male palpus. A pair of apical patellar spines. Epigynum presenting a more or less cornified scape, with its tip only slightly expanded; atriole openings wide and bordered by wall-like rims; a posterior commissure separating the rims. Abdomen tending to have elevations on the shoulders, and the anterior dorsal region rather convex. Promarginal teeth, especially the most distal one, strongly developed on the chelicera of the male. Legs of the female with slender spines except for ventral surfaces of femora.

GENOTYPE: *Gibbaranea bituberculata* (Walckenaer).

This peculiar genus is known from the Eastern Hemisphere, chiefly Europe, and contains species superficially resembling *Conaranaea*. Besides the genotype the following species belong to *Gibbaranea*: *G. ullrichi* (Hahn), *G. omoeda* (Thorell), and *G. gibbosa* (Walckenaer). A sketch of the median apophysis of the last-named species is shown in figure 6. Ample drawings of the genitalia are to be found in H. Wiehle (1931, in Dahl, F., Die Tierwelt Deutschlands, 27, Araneidae). It should be noted that in this genus the median apophysis of the male palpus is thickened when seen from the apical view, whereas in *Araniella* this structure is a flat plate, and the terminal apophysis and embolus are thorn-like in contrast with flagella-like structures of the latter.

**CHINESTELA CHAMBERLIN, 1924**

Median apophysis of male palpus wider than high, with a broad base; main spur endal, diagonal, or suberect from main piece; ectal spur or apophysis acute, single to multiple, arising from convex margin. Conductor a fleshy wall, bluntly tapering underneath embolus, and with or without an accessory cockscomb. Embolus a short, finger-like structure arising from a wide base. Terminal apophysis a curved, fleshy tube. Cymbium as usual, without spines. Paracymbium stout as in *Aranea*. A cone at the base of the femur, and the palpal tibia with an apical apophysis short and blunt to long, as in *Micrathena*. Palpal patella with a pair of apical spines. Tibia II curved, at least slightly incrassate to markedly so. Epigynum (in the only species seen) having a scape terminated by a broad, spoon-shaped cochlear; atriolar rim continuous anteriorly and laterally, but deficient posteriorly, replaced there by a comisure. Carapace more or less pilose. Abdomen more or less elongated as in *Larinia* and in some species of *Cyrtophora*; dorsum having setae amid the usual pilosity. Legs of the female spinose, especially on the femora; legs similar.

GENOTYPE: *Chinestela gisti* Chamberlin.

The writer examined specimens taken at Kanchrapara, India, by Dr. M. A. Cazier in 1944, which prove to belong to this genus, the species apparently being *C. exanthematica* (Dolleschall). The obscure genotype was described from a single specimen by Chamberlin, (1924, Proc. U. S. Natl. Mus., vol. 63, pp. 20-21, pl. 5, fig. 37). It is of especial interest because of its relationship with the next genus, *Conaranaea*.

**CONARANEAE, NEW GENUS**

Median apophysis of the male palpus higher than wide; base narrow in proportion to the greatest extent of the main piece; principal spur endal, long, subacute or acute, slanting diagonally or even almost horizontally from a neck-like extension of the main piece; ectal corner very pronounced, either a blunt angle or a process made up of splinter-like or antler-like tines. Conductor thick, foliaceous, erect. Embolus an erect leaf-like process arising from a collar. Terminal apophysis rather stout, flattened, curved over the embolus, and with a more or less narrow tip, overshadowing and closely bound to a weak sub-

terminal process. Cymbium having four, two, or no subapical spines. A basal cone on the femur of the male palpus. A pair of spines on the apex of the palpal patella. Coxa I without a spur. Tibia I incrassate or unmodified; tibia II unmodified except for the usual spines found in males of all araneine genera. Epigynum having a soft scape, with a spoon-shaped cochlear; scape moderately long to extremely long and convoluted; atriolar openings quite well hidden beneath the base of the scape and bounded by massive but not projecting rims; these rims convex both anteriorly and laterally, and fused posteriorly without a hiatus or commissure between them. Carapace pilose; one or more spines sometimes occurring on the cephalon. Abdomen subtriangular to widely ovate, with or without a prominent cone on each shoulder; dorsum of abdomen not pilose; anterior face of abdomen having long, dense, shaggy hairs. No ventral femoral spines in the male and female, but instead two rows of long ventral hairs, some almost spine-like, especially the distal ones; dorsal spines, at least one in legs I and II; prolateral spines, at least one in legs I and II. Tibiae and metatarsi in females moderately spinose, but in some species reduced to two or less in a row. Legs dissimilar.

GENOTYPE: *Conaranea excelsa* (Banks).

This genus differs from the allied *Conepeira* in many details of the structure in spite of the superficial resemblances between the two. The median apophysis of the male palpus of *Conaranea* has a wider main piece than that of *Conepeira*, and the principal spur is more elongated, and in the latter genus the ectal corner is weakly developed, does not project strongly laterally, nor is it elaborated into spurs or multiple processes. In the epigynum there is a difference in the character of the atriolar plates, and in *Conaranea* they are fused posteriorly. Specific differences are largely centered in the details of the genitalia, but supporting morphological and coloration features are indicated in the descriptions.

Spiders of this genus make a formal, vertical web, and hide completely in an obscure nest at an upper corner, the spider when thus concealed being found only by tracing the trap line to the nest. This is in contrast with the open nest of *Conepeira*.

*Conaranea* has a wide distribution but one of a striking pattern. It inhabits temperate Eurasia from western Europe to Japan and is present in western North America, extending only

as far south as Mexico. It is divisible into two subgenera, *Conaranaea* confined to North America, and *Mimaranea* inhabiting both Eurasia and North America.

#### KEY TO THE SUBGENERA OF *Conaranaea*

Tibia I of the male incrassate. Principal spur of the median apophysis of the male palpus slanting almost horizontally (transversely) . . . subgenus *Mimaranea*  
Tibia I not incrassate. Principal spur of the median apophysis slanting more diagonally . . . . . subgenus *Conaranaea*

It is immaterial which of the first two tibiae is incrassate in any given genus. Under *Aranea* in an earlier contribution (see American Museum Novitates, no. 1487, 1951) it should have been stated that the male of *Aranea alsine* Walckenaer of northern Europe has the clasping structure on tibia I.

#### MIMARANEA, NEW SUBGENUS

TYPE SPECIES: *Conaranaea triguttata* (Fabricius), figures 18, 19, and 31.

The features of this subgenus have been detailed under the genus *Conaranaea*. The general characteristics of the median apophysis of the male palpus is shown in figure 19. The more transversely inclined principal spur and its fundament is peculiar in contrast with a species like *C. excelsa* (Banks), (fig. 21). In this connection it should be pointed out that in a subadult male in the collection of the Museum of Comparative Zoölogy, from Berkeley, California (J. H. Emerton), the structures can be seen through the integument of a palpus in the penultimate stage. Here the principal spur is even more suberect than in the figured specimen. The incrassate tibia I of the male is shown in figure 18. It is probable that this character is lost by regression. The epigynum is shown in figure 31.

Among other Eurasian species that belong in this subgenus is *C. sturmi* (Hahn).

#### *Conaranaea gertschi*, new species

Figures 17, 30, 33

MALE: Total length, 4.5 mm. Median apophysis of male palpus as illustrated in figure 33.

FEMALE: Total length, 5.0 mm. Carapace, 2.2 mm. long, 1.8 mm. wide. Abdomen, 4.0 mm. long, 3.0 mm. wide.

Color uniform yellow except for a brown folium on dorsum of abdomen, and brown spots on sides and anterior margin. Abdomen subtriangular, with stout, broad cones, one on each shoulder.

First leg: femur, 2.7 mm.; patella, 1.0 mm.; tibia, 1.8 mm.; metatarsus, 2.1 mm.; and tarsus, 1.0 mm. Fourth leg: femur, 2.0 mm.; patella, 0.9 mm.; tibia, 1.4 mm.; metatarsus, 1.4 mm.; and tarsus, 0.4 mm.

Epigynum as shown in figure 30.

The above measurements probably do not give a full picture of the size range of this species. One female studied has a total length of 6.0 mm.

TYPE LOCALITY: Male holotype, Coconino County, Arizona, August 29, 1935 (I. J. Cantrall).

OTHER LOCALITIES: Arizona: Female allotype from Chiricahua Mountains, July 18, 1936 (Knull); female paratype, Huachuca Mountains, July 18, 1936 (Knull).

This American species of the subgenus *Mimaranea* is exceptional in that the median apophysis of the male palpus is unarmed at the ectal corner.

#### CONARANEA, NEW SUBGENUS

TYPE SPECIES: *Conaranea excelsa* (Banks).

#### *Conaranea montereyensis*, new species

Figures 3, 24, 25

FEMALE: Total length, 5.3 mm. Carapace, 2.3 mm. long, 1.8 mm. wide. Abdomen, 3.5 mm. long, 3.4 mm. wide.

Carapace yellow, sometimes with margins and cervical groove brown. Abdomen having a bluish gray tone on the base; dorsum brightly colored, a transverse, procurved border zone of pink on white; folium speckled on green, blue, or gray. Legs ivory yellow, sometimes ringed.

Abdomen subtriangular, nearly as wide as long, and with stout, blunt cones or angles, one on each shoulder. Stout spines on tibiae few in a row. First leg: femur, 2.5 mm.; patella, 0.9 mm.; tibia, 2.2 mm.; metatarsus, 2.0 mm.; tarsus, 1.0 mm.

Epigynum as illustrated in figure 25. The appearance of this species is shown in figure 3. A large series of specimens gives a total length of 4.8 to 5.8 mm. as the range in size.



**MALE:** Total length, 3.8 mm. Carapace, 2.0 mm. long, 1.5 mm. wide. Abdomen, 2.2 mm. long, 1.9 mm. wide.

Colors much as in the female.

First leg: femur, 2.7 mm.; patella, 1.0 mm.; tibia, 2.0 mm.; metatarsus, 2.0 mm.; tarsus, 1.2 mm.

Median apophysis of the male palpus as illustrated in figure 24. In the species the principal spur is unusual in being nearly straight. The ectal tines are not visible except when posed at an angle.

**TYPE LOCALITY:** Female holotype and paratypes from Monterey, Monterey County, California, August-November, 1945 (A. F. Archer).

**OTHER LOCALITIES:** California: Male allotype and immature paratypes from Hope Ranch, Santa Barbara, April 5, 1948, and July 4, 1948, respectively (H. L. Shantz); female paratypes, Carmel, Monterey County, September-November, 1945 (A. F. Archer); female paratypes, Pacific Grove, Monterey County, October, 1945 (A. F. Archer); female paratype, Del Monte Forest, Monterey County, October 8, 1945 (A. F. Archer); female paratype, Cypress Point, Monterey County, October, 1945 (A. F. Archer); female paratypes, Presidio, San Francisco, June 30, 1948 (H. L. Shantz); female paratypes, Westwood Village, Los Angeles County, August-November, 1942 (Dereth Cowles, Kay Cowles, and David Verrity).

This species is especially common on ornamental shrubs and hedges in towns.

### ***Conaranea excelsa* (Banks)**

Figures 20, 21, 27

*Epeira excelsa* BANKS, 1896, Jour. New York Ent. Soc., vol. 4, p. 90.

**MALE:** Total length, 4.3 mm. Carapace, 2.0 mm. long, 1.9 mm. wide. Abdomen, 2.8 mm. long, 2.5 mm. wide.

Median apophysis of the male palpus as illustrated in figure 21.

**FEMALE:** Total length, 4.3 to 7.0.

Carapace yellow or orange. Dorsum of abdomen tan to brown, sometimes mottled. Legs orange to brown.

Epigynum as shown in figure 27.

This species is quite similar to the preceding one in appear-

ance. The spines on the cymbium of the male palpus are shown in figure 20.

TYPE LOCALITY: Female holotype, Palo Alto, California (W. D. Fletcher), in the M.C.Z. collection.

OTHER LOCALITIES: California: Male (androtype) Leona Heights, Alameda County, May 5, 1918 (E. P. Van Duzee), M.C.Z.; female, Sebastopol, M.C.Z.; males, Claremont, Los Angeles County, M.C.Z.; males and females, taken at various collecting stations, Hastings Natural History Reservation, Monterey County, March, 1946, to April, 1948, both in the A.M.N.H. collection and in the Reservation collection; female, Yosemite National Park, July 3, 1931, this and all following records in the A.M.N.H. collection; male, females, San Francisco (R. F. Sternitsky); male, female, Stanford, 1947 (J. W. Tilden); female, Page Mill Road, Santa Clara County, May 4, 1947 (J. W. Tilden); male, female, Stevens Creek, Santa Clara County, April 20, 1941 (W. M. Pearce); male, Green Valley Falls, Solano County, April 27, 1941 (W. M. Pearce).

This species inhabits tall ground plants, California live oak, and *Quercus douglasii*.

### **Conaranea pacifica (McCook)**

Figures 26, 28, 29

*Epeira pacifica* McCook, 1893, American spiders, vol. 3, p. 180, pl. 9, figs. 15-16.

MALE: Specimens of about the same stature as *C. excelsa* (Banks). Median apophysis of the male palpus as illustrated in figure 29. In figure 28 the principal parts of the terminal division of the male palpus are shown and illustrate these structures for the genus *Conaranea*.

FEMALE: The epigynum is shown in figure 26. Besides the structure of the atriole plates the convoluted scape is characteristic of this species.

TYPE LOCALITY: San Diego, San Diego County, California.

OTHER LOCALITY: Mexico: Three males, five females, Apulco, Hidalgo, October 6, 1947 (H. M. Wagner).

### **Conaranea bispinosa (Keyserling)**

Figures 4, 14, 15, 22, 23

*Epeira bispinosa* KEYSERLING, 1884, Verhandl. Zool.-Bot. Gesellsch. Wien,

vol. 34, p. 531, pl. 13. KEYSERLING, 1892, Die Spinnen Amerikas, Epeiridae, p. 124, pl. 6, fig. 92.

*Epeira bonsallae* MCCOOK, 1893, American spiders, vol. 3, p. 179, pl. 8, fig. 10.

MALE: Total length, 5.0 mm. First leg: femur, 2.8 mm.; patella, 1.3 mm.; tibia, 2.3 mm.; metatarsus, 2.0 mm.; tarsus, 1.0 mm.

Median apophysis of male palpus as illustrated in figure 14. Terminal structures of the genital bulb of male palpus as shown in figure 23. Cymbium with slender apical spines as shown in figure 15. Ventral spines of tibia I slightly thickened as usual, but tibia itself not incrassate (fig. 4). All figures drawn from a specimen taken at Herkey Creek, San Jacinto Mountains, Riverside County, California.

FEMALE: Total length, 5.3 mm. Carapace, 2.5 mm. long, 2.1 mm. wide. Abdomen, 3.7 mm. long, 4.6 mm. wide. Measurements taken from Keyserling.

Shoulder cones on the abdomen very prominent and somewhat laterally produced.

Epigynum as illustrated in figure 22, drawn from Keyserling's type now in the Museum of Comparative Zoölogy.

TYPE LOCALITY: San Diego, San Diego County, California.

OTHER LOCALITY: California: Herkey Creek, San Jacinto Mountains, Riverside County.

### ***Conaranea anguinifera* (F. O. P. Cambridge)**

*Aranea anguinifera* F. O. P. CAMBRIDGE, 1902, Biologia Centrali-Americana, Arachnida, vol. 2, p. 514, pl. 49, figs. 14, 14a.

FEMALE: Total length, 4.5 mm. according to Cambridge.

The abdomen is subtriangular, and with shoulder cones, but not so wide proportionately as the previous species.

Epigynum with a very convoluted scape, more strikingly so than is the case even in *C. pacifica* (McCook). In Cambridge's figure 14a the atriolar structure is partly hidden behind the scape, but differs from all other species in that there is a deep sulcus just inside each outer corner and indenting the posterior margin. No specimen other than the recorded type is known to the writer, and no figure is given in this paper.

TYPE LOCALITY: Omilteme, Guerrero, Mexico, 8000 feet elevation.

**CONEPEIRA, NEW GENUS**

Median apophysis of male palpus higher than wide; base relatively narrow; a moderately stout apical spur, suberect to almost horizontal, arising from a short neck thickened below the collar; ectal corner varying from very blunt to angular, or else a short, acute denticle. Embolus a finger-like process hidden beneath an overhanging, stout, finger-like terminal apophysis. A prominent, finger-like (lateral) subterminal apophysis with a cleft tip. Conductor an erect, fleshy tag with apical portion somewhat appressed. Cymbium having one to three spines near the apex, rarely elsewhere; the spines slender to stout, located on a raised point. Epigynum having the scape rather short to long and having a spoon-shaped cochlear; atriolar openings located anteriorly behind atriolar plates; atriolar plates not projecting outward, comprising a wall-like blade, leaf-like or helicoid structures; posterior portion not forming a continuous, fused rim, but instead an impressed commissure between the wings of the atriolum. Carapace not pilose; sometimes with one or more spines on the cephalic region. Abdomen subtriangular to widely ovate; a more or less acute cone on each shoulder or shoulders reduced to blunt angles or flattened elevations; dorsum of abdomen not pilose, but having scattered hairs on base, side, and caudal region. A basal spur on the femur of the male palpus; a pair of distal patellar spines present. Tibia II unmodified. Coxae without spurs. No ventral femoral spines, but instead two rows of rather long hairs, usually each mounted on a point, the two distal ones almost spine-like; dorsal spines present; prolateral spines on legs I and II; retrolateral spines in males. Tibiae and metatarsi spinose on all sides, at least two in a row; two rows of ventral spines in some males. Legs dissimilar.

GENOTYPE: *Conepeira miniata* (Walckenaer).

Spiders of this genus construct a vertical web with a rather open nest at an upper angle. The spider usually sits facing the web at the end of the trap line, but sometimes sits back to the web (*C. bivittata*). It is a curious fact that some species have not been taken in association with a formal web, but are found underneath a leaf on a tangle of threads like those of *Theridion*. This proves to be true in the case of *C. guttulata* (Walckenaer). The egg sac is a wafer-shaped, orange or yellow patch adhering to a leaf. The species are rather brightly colored.

**Conepeira partita** (Walckenaer)

Figures 34, 63

*Epeira partita* WALCKENAER, 1841, Histoire naturelle des insectes, aptères, vol. 2, p. 46. ABBOT, MS, Spiders of Georgia, no. 40.

MALE: Total length, 2.6 mm. Carapace, 1.6 mm. long, 1.3 mm. wide. Abdomen, 1.4 mm. long, 1.2 mm. wide.

Carapace yellow. Abdomen with a wide transverse band between the shoulder humps; two pairs of spots on anterior border, two pairs of black muscle scars in shoulder region, three pairs of dots on either side of dorsum.

Median apophysis of male palpus as illustrated in figure 34. Cymbium having only one spine.

FEMALE: Total length, about 3.5 mm.

Epigynum as illustrated in figure 63. The epigynum has shallower atriole wings than is the case in *C. miniata* (Walckenaer), and the deciduous scleritic plaques are very distinct. These plaques will be shown on at least one wing in every species where known.

TYPE LOCALITY: Male neotype from Waycross, Ware County, Georgia, April 21, 1938 (W. J. Gertsch).

OTHER LOCALITIES: Florida: Male, west of Gainesville, Alachua County, April 18, 1938 (W. J. Gertsch). District of Columbia: Female, Washington (G. Marx), M.C.Z.

**Conepeira atlantis**, new species

Figures 32, 35, 60

MALE: Carapace, 1.4 mm. long, 1.2 mm. wide.

Median apophysis of male palpus as shown in figure 35. Cymbium with two spines. Terminal structures of the genital bulb as shown in figure 32.

FEMALE: Total length, 3.0 mm. Carapace, 1.2 mm. long, 1.0 mm. wide. Abdomen, 2.7 mm. long, 2.7 mm. wide.

A species much like a small *C. miniata* (Walckenaer) in structure and appearance. Carapace plain yellowish, without any reticulated pattern. Dorsum of abdomen with a wide, white, transverse band between the shoulders; base and sides gray, with spots and flecks ornamenting them; venter olivaceous.

Epigynum as illustrated in figure 60.

TYPE LOCALITY: Male holotype and immature paratypes

from Lakehurst, Ocean County, New Jersey, June 1, 1902 (J. H. Emerton).

OTHER LOCALITIES: Massachusetts: Female allotype, Woods Hole, Barnstable County, August 1, 1901 (H. Britcher); female paratype, Chatham, Barnstable County (J. H. Emerton), M.C.Z. New York: Two male paratypes, Riverhead, Long Island, May 1, 1946 (Roy Latham). New Jersey: Two male paratypes, two female paratypes, 7 miles northwest of New Gretna, May 13, 1949 (W. J. Gertsch).

The specimens from the first two localities were labeled by Emerton as *Epeira scutulata* Hentz, that is to say, *C. miniata*, but this very distinct species replaces the latter in the north-eastern region.

### ***Conepeira floridensis* (Banks)**

Figures 38, 58

*Epeira floridensis* BANKS, 1904, Proc. Acad. Nat. Sci. Philadelphia, p. 129, pl. 8, fig. 5.

*Aranea floridensis* ARCHER, 1941, Alabama Mus. Nat. Hist., Mus. Paper 18, pp. 9, 20, pl. 4, fig. 2.

MALE: Total length, 2.7 mm.

Median apophysis of male palpus as illustrated in figure 38.

FEMALE: Range in size, total length, 2.0–3.4 mm.

Color pattern almost exactly as in *C. miniata*, but lacking the reticulated pattern on the cephalon. Abdomen apt to have green markings; a transverse white band between the elevated cones on each shoulder.

Epigynum as illustrated in figure 58. The deciduous scleritic plaques on the atriolum may or may not be present.

LOCALITIES: Florida: Male, females, Orlando, Orange County, November 11–14, 1946 (A. F. Archer), Archer collection; females, Winter Park, Orange County, February 9–10, 1946 (S. Rounds); female, Highway 323, Alachua County, November 11, 1934 (L. Maxwell); females, Myakka River State Park, Sarasota County, April 6, 1938 (W. J. Gertsch); male, female, Indian Town, Martin County, April 28, 1938 (W. J. Gertsch); female, Sebastian, February 1932 (G. Nelson), M.C.Z.; female, Edgewater, M.C.Z.; females, Royal Palm State Park, Dade County, March 6–24, 1925 (W. S. Blatchley), M.C.Z.; females, December 27–28, 1940 (A. F. Archer), Archer collection; female, Key West, Monroe County, A.M.N.H.

This species is one of the most abundant members of *Conepeira*, being especially frequent in citrus orchards and garden ornamentals in towns. Two or more orange egg sacs are fastened to the under surfaces of leaves.

### ***Conepeira miniata* (Walckenaer)**

Figures 36, 37, 61

*Epeira miniata* WALCKENAER, 1837, Histoire naturelle des insectes, aptères, vol. 11, p. 39. ABBOT, MS, Spiders of Georgia, no. 228 (type). MCCOOK, 1893, American spiders, vol. 3, p. 177, pl. 8, figs. 8, 9, pl. 10, figs. 7-9. CHAMBERLIN AND IVIE, 1944, Bull. Univ. Utah, vol. 35, no. 9, p. 100.

*Aranea miniata* ARCHER, 1940, Alabama Mus. Nat. Hist., Mus. Paper 14, p. 41, pl. 4, fig. 1. ARCHER, 1941, *ibid.*, Mus. Paper 18, p. 20, pl. 4, fig. 1.

MALE: Total length, 3.3 mm.

Median apophysis of male palpus as illustrated in figure 36. Cymbium having three spines (fig. 37), Gulf State Park, Baldwin County, Alabama.

FEMALE: Range in size, total length, 3.2-5.0 mm. Carapace and legs ivory yellow to yellowish brown; a reticulated red pattern covering entire cephalon in most specimens. Abdomen subtriangular (3.2 mm. long, 4.0 mm. wide in large females) with a transverse band between acute shoulder angles; speckled blue or green on the base; blue, green, or gray on either side of the dorsal folium.

Epigynum as illustrated in figure 61.

LOCALITIES: Florida: Female, Highway 604, Citrus County, April 30, 1937 (W. J. Gertsch); females, Peace River, Arcadia, DeSota County, March 30, 1939 (W. J. Gertsch); male, female, Big Tree near Longwood, Seminole County, March 23, 1939 (W. J. Gertsch); males and females from several localities in Alachua County, Florida. These records appear to represent the southernmost limit of the range of *C. miniata*. A few records are known from Georgia. In the Archer collection are 10 lots from Alabama. This species certainly occurs in Tennessee, and records show its presence in eastern Mississippi: three females, Camp Shelby, Forrest County, Mississippi, 1945-1946 (A. F. Archer), Archer collection.

This species is common on ornamentals and in gardens in favored localities on the Gulf Coast of Alabama and on the borders of hammocks and swamps in the same area but is rather uncommon farther to the north.

***Conepeira dawsoni*, new species**

Figures 13, 39, 53, 59

MALE: Total length, 3.2 mm. Carapace, 1.5 mm. long, 1.2 mm. wide. Abdomen, 1.7 mm. long, 1.7 mm. wide.

Coloration much as in the female, but the transverse band on the dorsum of the abdomen is split in the middle. First leg: femur, 1.7 mm.; patella, 0.7 mm.; tibia 2.6 mm.; metatarsus, 2.4 mm.; tarsus, 0.9 mm.

Median apophysis of male palpus as illustrated in figure 39. A black lobe is present at the base of the embolus. Cymbium with three stout spines. Tibia I having stout prolateral spines as shown in figure 53.

FEMALE: Total length, 4.0 mm. Carapace, 1.6 mm. long, 1.2 mm. wide. Abdomen, 2.2 mm. long, 2.8 mm. wide.

Carapace ivory yellow, but with green borders; cervical groove and longitudinal groove green. Abdomen much as in *C. miniata* in coloration; white-circled dots on either side of the folium very conspicuous (fig. 13).

Epigynum as illustrated in figure 59. The accessory scleritic plaque on the atriolum is more regular in outline than is that of *C. miniata*.

This species is dedicated to Col. Allan W. Dawson who was surgeon of Camp Van Dorn, Mississippi, in 1944.

TYPE LOCALITY: Male holotype, female allotype, and male and female paratypes from Centreville, Wilkinson County, Mississippi, April–August, 1944 (A. F. Archer).

***Conepeira mayo* (McCook)**

Figure 64

*Epeira mayo* McCook, 1893, American spiders, vol. 3, p. 179, pl. 8, fig. 11.

FEMALE: Range in size, total length, 4.5–5.1 mm. Carapace, 2.5 mm. long, 1.7 mm. wide. Abdomen, 3.1 mm. long, 4.6 mm. wide.

The abdomen lacks the folium and the transverse band between the shoulders but has two pairs of muscle scars plainly visible.

Epigynum as illustrated in figure 64. McCook's figure was drawn from a specimen sufficiently retracted so that only the posterior portion of the atriolum was visible. The specimen seen by the writer was one lent by D. C. Lowrie.



LOCALITY: Female, Smith, La Porte County, Indiana, August 5, 1939 (D. C. Lowrie). McCook records this species from Wisconsin and Minnesota without further localities. The genus *Conepeira* is very weakly represented in collections from the central United States, and its species may prove to be rare in this region.

***Conepeira glyphica*, new species**

Figure 56

FEMALE: Total length, 3.9 mm. Carapace, 1.9 mm. long, 1.3 mm. wide. Abdomen, 2.5 mm. long, 2.0 mm. wide.

Coloration (in alcohol) exactly like that of *C. guttulata* (Walckenaer). Shoulder cones extremely blunt. Scattered hairs on the margins, but dorsum of the abdomen very smooth. First leg: femur, 2.0 mm.; patella, 0.7 mm.; tibia, 1.8 mm.; metatarsus, 2.0 mm.; tarsus, 0.8 mm.

Epigynum as illustrated in figure 56. The scape is longer and more convoluted than that of *C. mayo* (McCook), another midwestern species. The atriolum suggests that of *C. juniperi* (Emerton), especially in the shape of the wings, but the surface of each one is very concave.

TYPE LOCALITY: Female holotype from Wildcat Mountain, Vernon County, Wisconsin, August 11, 1949 (Herbert Levi).

***Conepeira nigrofoliata* (Keyserling)**

Figures 41, 65

*Larinia nigrofoliata* KEYSERLING, 1883, Verhandl. Zool.-Bot. Gesellsch. Wien, vol. 33, p. 653, pl. 21, fig. 5.

Equal in color, general appearance, and size to *C. dawsoni*, new species, but the abdomen of the female lacks the acute cone on each shoulder. This species is transitional from the group of *C. miniata* (Walckenaer) to that of *C. bivittata* (Walckenaer). In the latter group the shoulder angles are reduced to blunt cones, and in the median apophysis of the male palpus the spur in most species does not include so much of the total structure as is the case in the first section.

Median apophysis of male palpus as illustrated in figure 41. Epigynum as illustrated in figure 65. Dr. W. J. Gertsch furnished sketches from the original specimens.

TYPE LOCALITY: Male type from Summit Canyon, Colorado

(Marx); female, Santa Rosa, Colorado (Marx, manuscript name appended).

***Conepeira forata* (Keyserling)**

Figures 43, 66

*Larinia forata* KEYSERLING, 1893, Die Spinnen Amerikas, Epeiridae, p. 295, pl. 15, fig. 218.

MALE: Carapace, 2.0 mm. long. Abdomen, 3.0 mm. long.

Median apophysis of male palpus as illustrated in figure 43. There is a serrated border between the apical spur and the lateral denticle. The cymbium has a pair of stout spines.

FEMALE: This species is almost identical in size and appearance with *C. guttulata* (Walckenaer). Carapace and legs very light yellow. Abdomen chalky white except for a black and crimson patch on the dorsum.

Epigynum as illustrated in figure 66.

LOCALITY: Male, female, Jefferson City, Cole County, Missouri, June 30 and July 24, 1945 (W. W. Dowdy).

***Conepeira guttulata* (Walckenaer)**

Figures 42, 67

*Epeira guttulata* WALCKENAER, 1837, Histoire naturelle des insectes, aptères, vol. 11, p. 39. ABBOT, MS, Spiders of Georgia, no. 233 (type).

*Epeira nivea* HENTZ, 1847, Jour. Boston Soc. Nat. Hist., vol. 5, p. 74, pl. 31, fig. 9.

*Epeira alba* KEYSERLING, 1884, Die Spinnen Amerikas, p. 231, pl. 13, fig. 29.

MALE: Total length, 4.1 mm. First leg: femur, 3.0 mm.; patella, 1.0 mm.; tibia, 2.6 mm.; metatarsus, 3.0 mm.; tarsus, 1.0 mm.

Median apophysis of male palpus as illustrated in figure 42. Cymbium has a pair of stout spines in the apical region.

FEMALE: Total length, 5.0 mm. Abdomen, 3.0 mm. long, 2.0 mm. wide. A chalky white or pale yellow species with long pale spines on the legs. The typical pattern of the non-gravid female is a black-bordered, subcircular patch on the dorsum. However, the gravid female develops a series of crimson and black rings surrounding a middorsal area, and this is the pattern found in Abbot's drawing that Walckenaer used as the type for his species. This is likewise what Hentz repre-

sented under the name *Epeira sanguinalis* (1847, Jour. Boston Soc. Nat. Hist., vol. 5, pl. 31, fig. 15).

Epigynum as illustrated in figure 67.

LOCALITIES: North Carolina: Female, Brevard, Transylvania County, July 17, 1942 (Westfall), M.C.Z. Alabama: Male, female, Tuscaloosa Memorial Park, Tuscaloosa County, August 18, 1947 (A. F. Archer); female, University of Alabama campus, Tuscaloosa, September 3, 1949 (A. F. Archer); male, 4 miles north of Jemison, July 17, 1946 (A. F. Archer); female, Eoline, Bibb County, July, 1946 (A. F. Archer); gravid female, Oakwood Cemetery, Montgomery, September, 1946 (A. F. Archer); female, Bear Creek, Wilcox County, July 4, 1946 (A. F. Archer). Georgia: Females, Brier Creek, Screven County, April 12, 1943 (W. Ivie), University of Utah.

The spiders occur on all sorts of tall shrubs and trees, but especially on oaks and alders. This and the nearest related species have never been taken by the writer as adults in association with a formal web.

### ***Conepeira nivosa*, new species**

Figures 45, 57, 68

MALE: Total length, 4.5 mm. Carapace, 2.2 mm. long, 1.7 mm. wide. Abdomen, 2.5 mm. long, 1.7 mm. wide.

Median apophysis of male palpus as illustrated in figure 45. Typical terminal structures of the genital bulb as shown in figure 57.

FEMALE: Total length, 4.9 mm. Carapace, 2.5 mm. long, 1.7 mm. wide. Abdomen, 2.8 mm. long, 2.5 mm. wide.

Coloration exactly like that of *C. guttulata* (Walckenaer). As usual in this section of *Conepeira* the cone on each shoulder is very flattened.

Epigynum as illustrated in figure 68.

TYPE LOCALITY: Female holotype from Centerville, Wilkinson County, Mississippi, July, 1944 (A. F. Archer).

OTHER LOCALITIES: Louisiana: Male allotype and immature paratypes, Kisatchie National Forest, Grant Parish, June, 1941 (A. F. Archer); female, immature paratypes, Covington (N. Banks), M.C.Z. Missouri: female paratype, Kirkwood, M.C.Z.

The writer took this species from water oaks but in no case in association with a formal web.

**Conepeira alboventris** (Emerton)

Figures 47, 71

*Epeira alboventris* EMERTON, 1884, Trans. Connecticut Acad. Sci., vol. 6, p. 314, pl. 34, fig. 5, pl. 36, fig. 12.

*Araneus attestor* PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 280.

*Epeira attestor* KASTON, 1948, Connecticut Geol. Nat. Hist. Surv., bull. no. 70, pp. 260-261, pl. 37, figs. 791, 792.

**MALE:** Median apophysis of male palpus as illustrated in figure 47. Cymbium with three spines.

**FEMALE:** Total length, 4.0 mm.

This is a light-colored species like *C. nivosa*, with a middorsal patch of purple, but the abdomen is proportionately wider, and the shoulders lack cones.

Epigynum as illustrated in figure 71.

**LOCALITIES:** Georgia: Female, Thompson's Mills, 1930 (N. Banks), M.C.Z. New Jersey: Male, Ramsey, Bergen County (W. J. Gertsch). Maine: Female, Rangeley (F. W. Putnam), M.C.Z.

The above records extend the known range of this species beyond the records given by Emerton and Kaston. According to the rules, the name *alboventris* must be retained. It is not preoccupied by *Epeira albiventer* Keyserling, as has been supposed.

**Conepeira texana**, new species

Figures 48, 69

**MALE:** Total length, 3.8 mm. Carapace, 2.2 mm. long, 1.5 mm. wide. Abdomen, 2.9 mm. long, 1.7 mm. wide.

Coloration as in the female. Folium olivaceous gray.

Median apophysis of male palpus as illustrated in figure 48.

**FEMALE:** Total length, 3.8 mm. Carapace, 1.6 mm. long, 1.4 mm. wide. Abdomen, 2.0 mm. long, 2.1 mm. wide.

Carapace and legs ivory yellow; spines on legs dark. Abdomen with a chalky white ground color, a procurved band between the shoulders, and a gray folium dotted with red spots.

Epigynum as illustrated in figure 69.

**TYPE LOCALITY:** Male holotype from Mexia, Limestone County, Texas (M. Kagan).

OTHER LOCALITY: Arkansas: Female allotype, Berryville, Carroll County, June, 1941 (O. C. Wilton).

***Conepeira bivittata* (Walckenaer)**

Figures 12, 49, 70

*Epeira bivittata* WALCKENAER, 1837, Histoire naturelle des insectes, aptères, vol. 2, p. 37. ABBOT, MS, Spiders of Georgia, no. 234.

MALE: Total length, 3.2 mm. Carapace, 1.8 mm. long, 1.4 mm. wide. Abdomen, 1.7 mm. long, 1.3 mm. wide.

Median apophysis of male palpus and extracted embolus as illustrated in figure 49. Cymbium with a pair of stout apical spines.

FEMALE: Total length, 4.6 mm. Carapace, 1.2 mm. long, 1.0 mm. wide. Abdomen, 2.6 mm. long, 2.6 mm. wide.

A beautifully colored species and one that is easily matched with Abbot's drawing. Carapace and legs deep buff. Abdomen bright green except for a central, longitudinal, white band on anterior half and a lateral white band extending backward from each shoulder; four black dots on each lateral band. Abdomen subtriangular, as wide as long, and with blunt shoulder angles, as shown in figure 12.

Epigynum as illustrated in figure 70.

LOCALITIES: Florida: Male, Alachua County, April 8, 1938 (W. J. Gertsch). Alabama: Females, Grayson's Spring, Keel Mountain, Madison County, July 24, 1946 (A. F. Archer). Georgia: Female, Thompson's Mills, 1930 (N. Banks), M.C.Z. South Carolina: Female, Charleston, M.C.Z. North Carolina: Female, Raleigh, Wake County, September 10, 1943 (C. S. Brimley), M.C.Z.; female, Bryson City, Swain County, August 30, 1930 (N. Banks), M.C.Z. West Virginia: Females, Aurora, August 7, 1914 (N. Banks), M.C.Z. New York: Male, female, Ithaca, Tompkins County (N. Banks), M.C.Z.

In Alabama this species was found in pastures and sunlit glades where it had made formal webs on the foliage of red cedars.

***Conepeira marilandica*, new species**

Figures 11, 40, 50, 72

MALE: Total length, 3.8 mm. Carapace, 2.0 mm. long, 1.4 mm. wide. Abdomen, 1.9 mm. long, 1.8 mm. wide.

Coloration of the male as in the female, but not so brilliant. Leg formula 1243, as usual in *Conepeira*. First leg: femur, 3.0 mm.; patella, 1.0 mm.; tibia, 2.7 mm.; metatarsus, 2.1 mm.; tarsus, 0.8 mm.

Median apophysis of male palpus as illustrated in figure 50. Cymbium as shown in figure 40.

FEMALE: Total length, 5.0 mm. Abdomen, 3.3 mm. long, 3.0 mm. wide.

Carapace and legs ivory yellow; legs covered with longitudinal rows of red dots. Abdomen green, with two rows of red dots behind each shoulder. Carapace with three suberect spines on the cephalon behind the posterior eyes. Abdomen ovate, with blunt shoulder angles.

Epigynum as illustrated in figure 72. Female as shown in figure 11.

TYPE LOCALITY: Male holotype, female allotype, and male and female paratypes from Berwyn, Prince George's County, Maryland, July 5, 1942 (W. Jeffers, M. Muma).

OTHER LOCALITIES: Alabama: Female paratypes, Silver Hill, Baldwin County, July, 1945 (G. Nelson), M.C.Z.; immature female paratypes, Swift's Landing, Baldwin County, January, 1941 (A. F. Archer), Archer collection. Labrador: Female (old, faded specimen), October, 1900 (H. Britcher).

Some females from Berwyn, Maryland, recently seen in the Museum of Comparative Zoölogy, have emboli lodged in the atriolar openings. This species should not be confused with *C. juniperi* (Emerton) which differs very markedly in genitalia as well as in having longitudinal stripes on the abdomen.

### ***Conepeira mumai*, new species**

Figures 51, 73

MALE: Carapace, 1.5 mm. long, 1.0 mm. wide. Abdomen missing in the holotype.

Median apophysis of male palpus as illustrated in figure 51. This structure is more slender than that of *C. marilandica*, new species, the base is more slanting, and the denticle on the ectal angle is more approximate. First leg: femur, 2.0 mm.; patella, 1.0 mm.; tibia, 2.3 mm.; metatarsus, 2.4 mm.; tarsus, 0.9 mm.

FEMALE: Total length, 4.4 mm. Coloration almost exactly like that of the sibling species, *C. marilandica*, but lacking the

red spots on the dorsum of the abdomen and on the legs. Epigynum as illustrated in figure 73.

TYPE LOCALITY: Male holotype, female allotype, and male and female paratypes from Berwyn, Prince George's County, Maryland, July 5, 1942 (W. Jeffers, M. Muma).

OTHER LOCALITIES: New Hampshire: Female, Ponemah, Milford, October 20, 1904 (J. H. Emerton), M.C.Z. Maine: Female, Paris, July 14, 1914 (C. A. Frost), M.C.Z.; male, Peak's Island, Portland (J. H. Emerton), M.C.Z.; female, Fryeburg, August 6, 1913 (E. B. Bryant), M.C.Z.

### ***Conepeira sarasota*, new species**

Figure 74

FEMALE: Total length, 3.4 mm. Carapace, 1.6 mm. long, 1.2 mm. wide. Abdomen, 2.0 mm. long, 1.7 mm. wide.

Carapace pale green, with cervical grooves deep green. Abdomen with a light green ground color, and the dorsum covered with green dots in transverse row. Legs light green. Abdomen subglobose.

Epigynum as illustrated in figure 74.

TYPE LOCALITY: Female holotype from woods south of Sarasota, Sarasota County, Florida, December 26, 1940 (A. F. Archer).

### ***Conepeira unica*, new species**

Figure 75

FEMALE: Total length, 4.9 mm. Carapace, 2.0 mm. long, 1.5 mm. wide. Abdomen, 3.1 mm. long, 3.0 mm. wide.

Coloration of carapace and legs yellow. Dorsum of abdomen having a wide, transverse, white patch between the shoulders; anterior region, sides, and caudal region dark green; sides ornamented with dorsoventral, crimson lines, widely spaced; two pairs of black muscle scars; dark patches on the longitudinal, caudal strip.

Epigynum as illustrated in figure 75.

TYPE LOCALITY: Female holotype from Centreville, Wilkinson County, Mississippi, 1944 (A. F. Archer).

***Conepeira llano*, new species**

Figures 52, 55

MALE: Total length, 3.6 mm. Carapace, 1.7 mm. long, 1.4 mm. wide. Abdomen, 1.6 mm. long, 1.2 mm. wide.

Carapace and legs ivory yellow; orange rings on the legs. Dorsum of abdomen delicate, bluish green on anterior margin, light green elsewhere. Abdomen ovate; shoulder cones very blunt.

First leg: femur, 2.3 mm.; patella, 1.0 mm.; tibia, 2.0 mm.; metatarsus, 2.0 mm.; tarsus, 0.6 mm. Fourth leg: femur, 1.8 mm.; patella, 0.7 mm.; tibia, 1.7 mm.; metatarsus, 1.7 mm.; tarsus, 0.4 mm.

Median apophysis of male palpus as illustrated in figure 52. Cymbium having a pair of stout spines in the apical region.

FEMALE: Epigynum as illustrated in figure 55.

TYPE LOCALITY: Male holotype from Llano, Llano County, Texas, August 21, 1940 (L. I. Davis).

OTHER LOCALITY: Texas: Female allotype from Brazos County, N. Banks collection, M.C.Z.

***Conepeira innominata*, new species**

Figures 62, 77

MALE: Total length, 3.7 mm. Carapace, 1.9 mm. long, 1.6 mm. wide. Abdomen, 1.9 mm. long, 1.5 mm. wide.

Carapace and legs ivory yellow. Abdomen green above and yellow below. Abdomen ovate. First leg: femur, 2.0 mm.; patella, 0.8 mm.; tibia, 1.5 mm.; metatarsus, 1.7 mm.; tarsus, 1.0 mm.

Median apophysis of male palpus as illustrated in figure 62. Cymbium having a pair of stout subapical spines.

FEMALE: Total length, 4.4 mm. Carapace, 1.9 mm. long, 1.4 mm. wide. Abdomen, 2.9 mm. long, 3.9 mm. wide.

Carapace tan. Dorsum of abdomen deep green. Legs ivory yellow. Abdomen widely globose and without shoulder cones.

Epigynum as illustrated in figure 77.

TYPE LOCALITY: Male holotype from MacDill Field, Tampa, Hillsboro County, Florida, April 15-30, 1943 (Borys Malkin).

OTHER LOCALITIES: Florida: Female allotype, Everglades, April 10; male paratype, Clearwater, Pinellas County, April 11, 1943 (B. Malkin); male paratype, Blackbeard Island, July



13, 1942 (Shelford); immature female, Lake Placid, Archbold Biological Station, Highlands County, February 10, 1943 (M. A. Cazier); female, Altoona, M.C.Z.

***Conepeira ozarkensis*, new species**

Figures 16, 76

MALE: Total length, about 3.2 mm.

Median apophysis of male palpus as illustrated in figure 16.

FEMALE: Total length, 4.0 mm. In size and proportions quite similar to *C. juniperi* (Emerton). Carapace and legs yellow. Abdomen pale green or buffy, with a few red spots on the dorsum, and without shoulder cones.

Epigynum as illustrated in figure 76.

TYPE LOCALITY: Female holotype, Berryville, Carroll County, Arkansas, June and September, 1941 (O. C. Wilton).

OTHER LOCALITIES: Missouri: female paratype from Jefferson City, Cole County, July 24, 1945 (W. W. Dowdy); male allotype and female paratype from Diecker, St. Louis County, July 4, 1938 (P. Rau), M.C.Z.; immature female paratypes, Rankin, June 25, 1939 (P. Rau), M.C.Z.; female paratypes, immature male paratype, Wentzville, July 9, 1939 (P. Rau), M.C.Z. Mississippi: Female paratype, Centerville, Wilkinson County, 1944 (A. F. Archer).

***Conepeira juniperi* (Emerton)**

Figures 54, 78

*Epeira juniperi* EMERTON, 1884, Trans. Connecticut Acad. Sci., vol. 6, p. 313, pl. 34, fig. 6, pl. 36, figs. 14-16. EMERTON, 1909, *ibid.*, vol. 41, p. 200, pl. 5, figs. 1, 1a. KASTON, 1948, Connecticut Geol. Nat. Hist. Surv., bull. no. 70, p. 261, pl. 38, fig. 811, pl. 40, fig. 830.

MALE: Total length, 4.0 mm.

Median apophysis of male palpus as illustrated in figure 54. In this species we find cases in which the ectal angle of the median apophysis lacks any rudiment of a denticle.

FEMALE: Range in size, total length, 5.0-5.5 mm. The green abdomen has longitudinal white stripes whose margins are not so definite as those in *C. bivittata* (Walckenaer). Kaston's figure of the abdomen is perfect in every detail.

Epigynum as shown in figure 78.

LOCALITIES: New Jersey: Males, females, Lakehurst, Ocean

County. Georgia: Male, Athens, Clarke County. Florida: Male, immature female, Peace River, Arcadia, DeSota County, April 30, 1939 (W. J. Gertsch). New York: Female, Enfield Glen, August 7, 1908 (E. B. Bryant), M.C.Z.; female, Sea Cliff, Long Island (N. Banks), M.C.Z. Massachusetts: Females, Nantucket Island, July 10, 1913 (J. H. Emerton), M.C.Z. New Hampshire: Female, Fitzwilliam, July 20, 1907 (J. H. Emerton), M.C.Z.; two males, Ponemah, Milford, October 20, 1904 (J. H. Emerton), M.C.Z.

LARINIA SIMON, 1874

Median apophysis of male palpus erect, with main piece somewhat higher than wide; base relatively narrow; a pair of erect or suberect, equal or subequal spurs, the endal one tending to be a little the larger, and sometimes a third ectal spur also present. Embolus apparently a rather short tube. Conductor a wide, rather low wall, subtriangular or irregular. Terminal apophysis a subacute, tapering piece, the tip tending to be depressed. Lateral subterminal apophysis subtriangular, acute or blunt. Cymbium spinose. Paracymbium elongated, with a narrow tip. A basal spur on femur of male palpus; a pair of distal patellar spines present. Tibia II of male not incrassate. Coxae without spurs, or a trace on coxa I. Epigynum having a short, wide, fleshy scape. Atriolar openings very anterior, more or less completely hidden by the atriolar rims; atriolar rims very pronounced, quite prominent underneath the projecting scape; in some cases anterior portion of each rim differentiated into a lobe; posterior margin of epigynum provided with a commissural depression between each atriolar wing. Abdomen more or less elongate or ovate. Ventral femoral spines in one to two rows present or absent in male; a retrolateral femoral row sometimes present.

GENOTYPE: *Larinia linteata* Lucas.

The character of the median apophysis of the male palpus as well as other genitalic structures serves to distinguish this genus from the related genus *Conepeira*. *Larinia* has a more elongated abdomen than does the latter and lacks the shoulder angles or cones that are so frequently found in the two preceding genera. There is no justification for regarding *Drexelia* McCook as distinct, although it may prove to be of subgeneric value. At any rate *Larinia* is widely spread in both hemi-

spheres and appears to be a fairly uniform genus. The median apophysis of *L. borealis* (Banks), drawn from a specimen from St. Croix Falls, Wisconsin, is shown in figure 46. For comparison, that of *L. directa* (Hentz) is shown in figure 44. *Larinia mormon* (Keyserling) has a median apophysis much like that of the latter in the proportions of the main piece and in the wide sinus between the two spurs, but the spurs themselves are much shorter, and the tip of the endal one is bent over as in *L. borealis*. The writer is not familiar with the male of the remaining North American species, *L. famulatoria* (Keyserling), but the epigynum has a rather detailed resemblance to that of *L. tibelloides* de Lessert (1930, Rev. Suisse Zool., vol. 37, p. 633, fig. 11). On page 637 of the same publication is figure 14 of *L. faradjensis* de Lessert in which there is a good example of a median apophysis which has a third spur. The writer found the beginnings of a third spur in the median apophysis of *L. trifida* Tullgren, a species, as the previous two, also from Africa.

#### CYPHALONOTINI, NEW TRIBE

This tribe is here proposed to include the last two genera to be considered in this paper. Simon (1892, Histoire naturelle des araignées, ed. 2, vol. 1, p. 893) placed *Cyphalonotus* in the tribe Poltyini, but from a structural standpoint it should be placed in about the opposite pole of the Araneinae. The genitalia are very complicated and derivative in character, whereas in the Poltyini they are about as primitive as can be found among the araneine Argiopidae. The Poltyini belong with the Cyrtophorini, Mastophorini, Exechocentrini, Celaenini, and others in a revised phylogenetic series (not that following Simon's scheme). As for the Cyphalonotini, the genera included thereunder are characterized by the pair of distal dorsal spines on the patellae of the male palpus, but the modifications of the cephalon are more extreme than in the tribe Araneini proper, and the abdomen indeed recalls that of *Pollys*. In the genera here considered the cephalon tends to project forward, the modification taking place in the ocular region (more so than *Wixia* in the Araneini), forming a sort of turret that suggests males of *Conopistha* in the family Theridiidae.

**CYPHALONOTUS SIMON, 1895**

Median apophysis of male palpus prone, elongate, much longer than wide; base narrow; an upcurved ectal lobe; endal portion long, free, tapering to a nearly horizontal spur (in the genotype). Embolus a very short elevation underneath an overhanging terminal apophysis; the latter lobate, closely appressed to the apex of genital bulb. Conductor a low, wide wall. Cymbium not spinose; with a narrow apex; paracymbium elongated, projecting, with a recurved tip. A cone on the ventral base of the femur of male palp, closely articulated on a short spur on the endite; a pair of stout, dorsal, apical patellar spines. Coxa I with a spur. Tibia II not incrassate, but very elongated, and with distal end thickened; at least one spur-like spine. Epigynum having a strongly developed, elongated scape with a spatulate tip; atriolum lobate anteriorly, one lobe on each side of the scape; posterior margin entire and fused; atriolar openings anteriorly located, quite hidden. Carapace having a projecting, turret-like cephalon, containing all the eyes. Abdomen much higher than wide, having numerous anterodorsal lobes and processes; posterior vertical face very extensive and having short processes. Femora without ventral spines.

GENOTYPE: *Cyphalonotus larvatus* Simon, figure 2.

The median apophysis of the male palpus is shown in figure 2. Specimens from Avakubi, Congo, and identified by de Lessert were examined by the writer. Reference is here made to de Lessert (1930, Rev. Suisse Zool., vol. 37, pp. 665-666, fig. 35) for drawings of the spider and its epigynum. *C. columnifer* Simon also belongs to this genus.

**SIMONARACHNE, NEW GENUS**

Male palpus unknown. Epigynum having a tapering scape with recurved tip; atriolum projecting anteriorly as a single mass, terminated by a subcircular atriolar plate just underneath the scape. Carapace of the female about as usual, but that of the male having the cephalon in the form of a subocular turret, projecting forward. Abdomen hirsute and having a curved loop extending from it.

GENOTYPE: *Simonarchne laglaiziei* (Simon).

The genotype occurs in southern Asia and as far east as New Guinea.

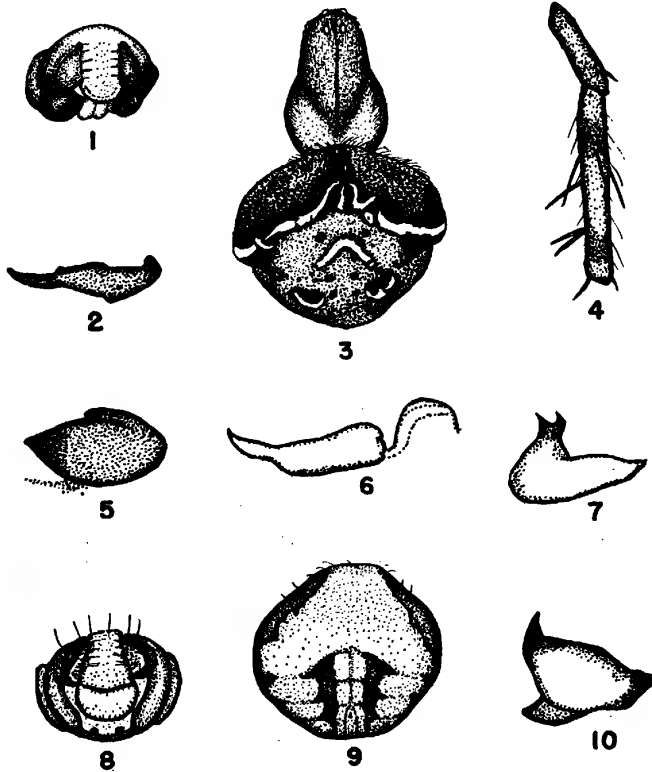


FIG. 1. *Araniella cucurbitina* (Walckenaer), epigynum.

FIG. 2. *Cyphalonotus larvatus* Simon, median apophysis of palpus.

FIG. 3. *Conaranaea montereyensis*, new species, holotype.

FIG. 4. *Conaranaea bispinosa* (Keyserling), left tibia I of male, prolateral view.

FIG. 5. *Araniella displicata* (Hentz), median apophysis of palpus.

FIG. 6. *Gibbaranea gibbosa* (Walckenaer), median apophysis of palpus in the usual location inside of ectal portion of upper margin of tegulum (after Wiehle).

FIG. 7. *Cambridgepeira lathyrina* (Holmberg), median apophysis of palpus.

FIGS. 8-10. *Cambridgepeira detrimentosa* (O. P. Cambridge). 8. Epigynum. 9. Abdomen of female. 10. Median apophysis of palpus.

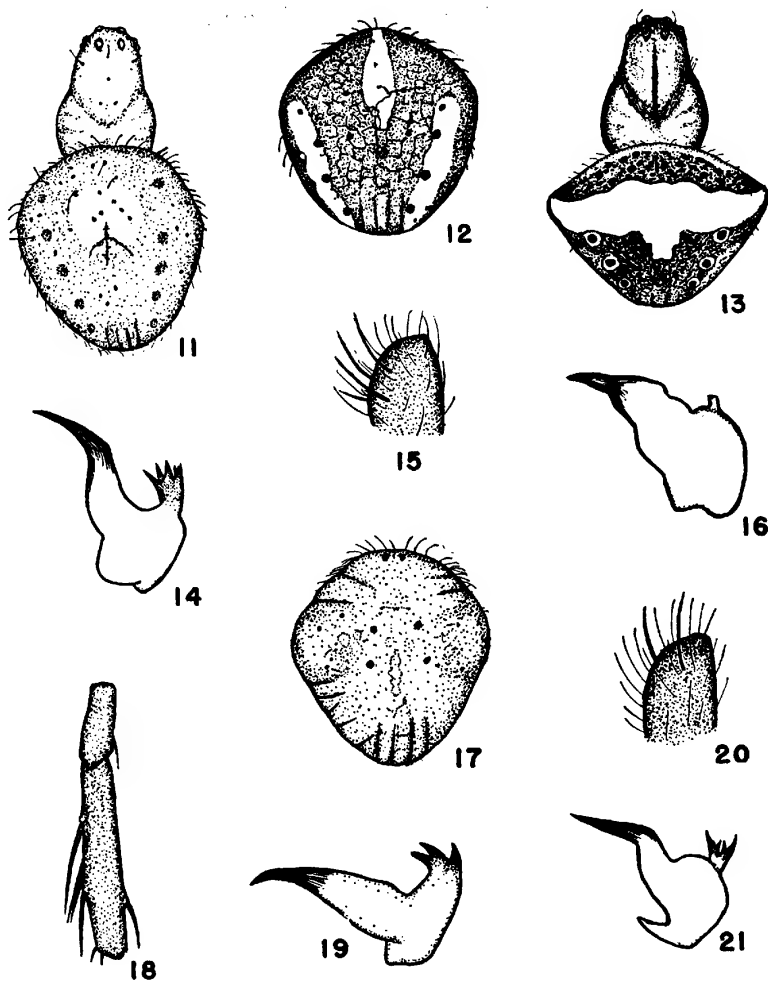


FIG. 11. *Conepeira marilandica*, new species, female allotype.

FIG. 12. *Conepeira bivittata* (Walckenaer), abdomen of female.

FIG. 13. *Conepeira dawsoni*, new species, female allotype.

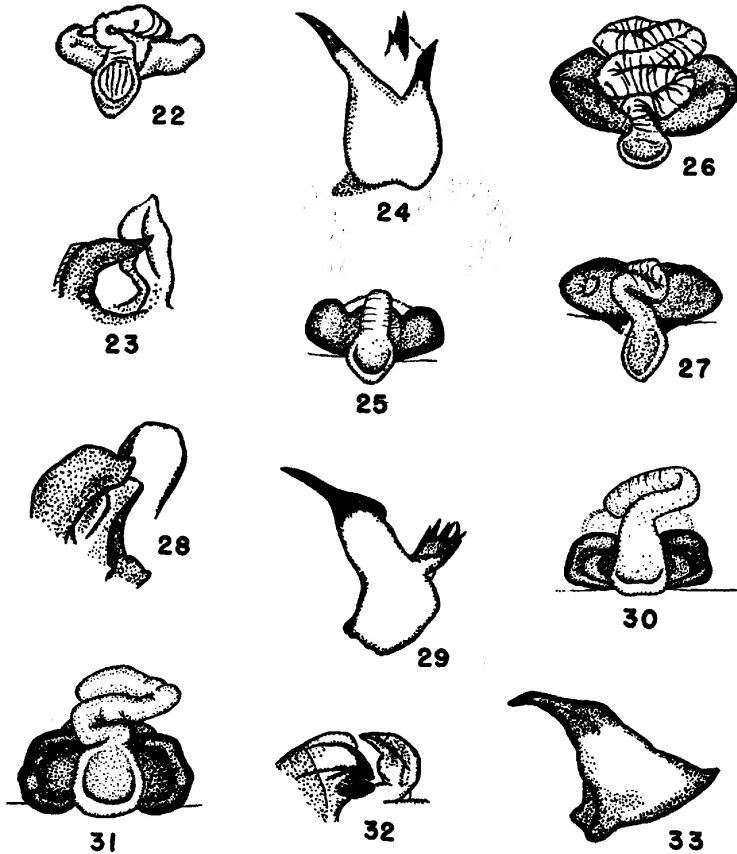
FIGS. 14, 15. *Conaranaea bispinosa* (Keyserling). 14. Median apophysis of palpus. 15. Cymbium.

FIG. 16. *Conepeira ozarkensis*, new species, median apophysis of palpus.

FIG. 17. *Conaranaea gertschi*, new species, abdomen of holotype.

FIGS. 18, 19. *Conaranaea triguttata* (Fabricius). 18. Left tibia I of male, ectal view. 19. Median apophysis of palpus.

FIGS. 20, 21. *Conaranaea excelsa* (Banks). 20. Cymbium. 21. Median apophysis of palpus.



FIGS. 22, 23. *Conaranea bispinosa* (Keyserling). 22. Epigynum. 23. Terminal division of palpus.

FIGS. 24, 25. *Conaranea montereyensis*, new species. 24. Median apophysis of palpus. 25. Epigynum.

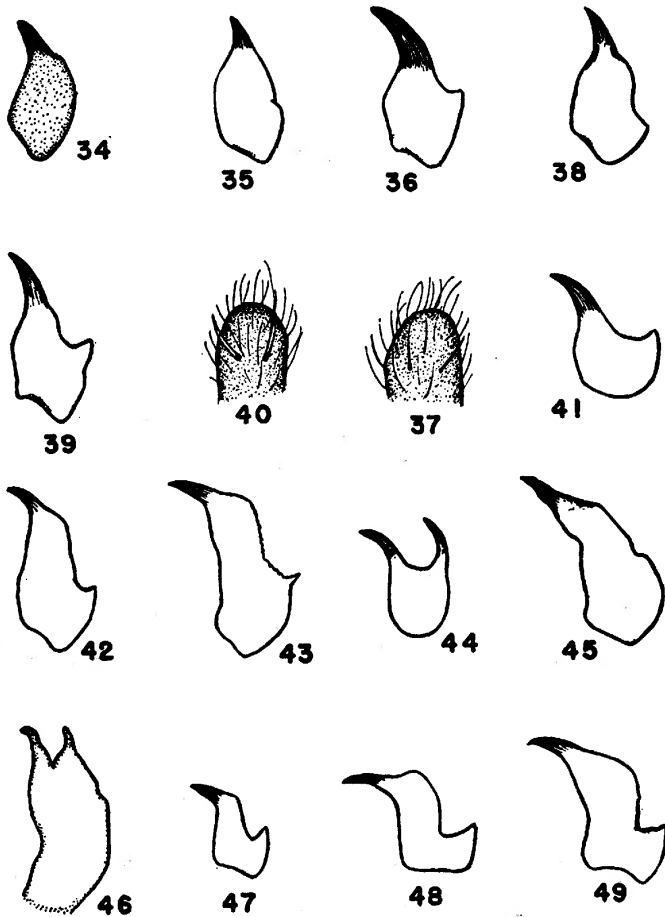
FIGS. 26, 28, 29. *Conaranea pacifica* (McCook). 26. Epigynum. 28. Terminal division of palpus. 29. Median apophysis of palpus.

FIG. 27. *Conaranea excelsa* (Banks), epigynum.

FIGS. 30, 33. *Conaranea gertschi*, new species. 30. Epigynum. 33. Median apophysis of palpus.

FIG. 31. *Conaranea triguttata* (Fabricius), epigynum.

FIG. 32. *Conepeira atlantis*, new species, terminal division of palpus.



- FIG. 34. *Conepeira partita* (Walckenaer), median apophysis of palpus.  
 FIG. 35. *Conepeira atlantis*, new species, median apophysis of palpus.  
 FIGS. 36, 37. *Conepeira miniata* (Walckenaer). 36. Median apophysis of palpus. 37. Cymbium.  
 FIG. 38. *Conepeira floridensis* (Banks), median apophysis of palpus.  
 FIG. 39. *Conepeira dawsoni*, new species, median apophysis of palpus.  
 FIG. 40. *Conepeira marilandica*, new species, cymbium.  
 FIG. 41. *Conepeira nigrofoliata* (Keyserling), median apophysis of palpus.  
 FIG. 42. *Conepeira guttulata* (Walckenaer), median apophysis of palpus.  
 FIG. 43. *Conepeira forata* (Keyserling), median apophysis of palpus.  
 FIG. 44. *Larinia directa* (Hentz), median apophysis of palpus.  
 FIG. 45. *Conepeira nivosa*, new species, median apophysis of palpus.  
 FIG. 46. *Larinia borealis* (Banks), median apophysis of palpus.  
 FIG. 47. *Conepeira alboventris* (Emerton), median apophysis of palpus.  
 FIG. 48. *Conepeira texana*, new species, median apophysis of palpus.  
 FIG. 49. *Conepeira bivittata* (Walckenaer), median apophysis of palpus.



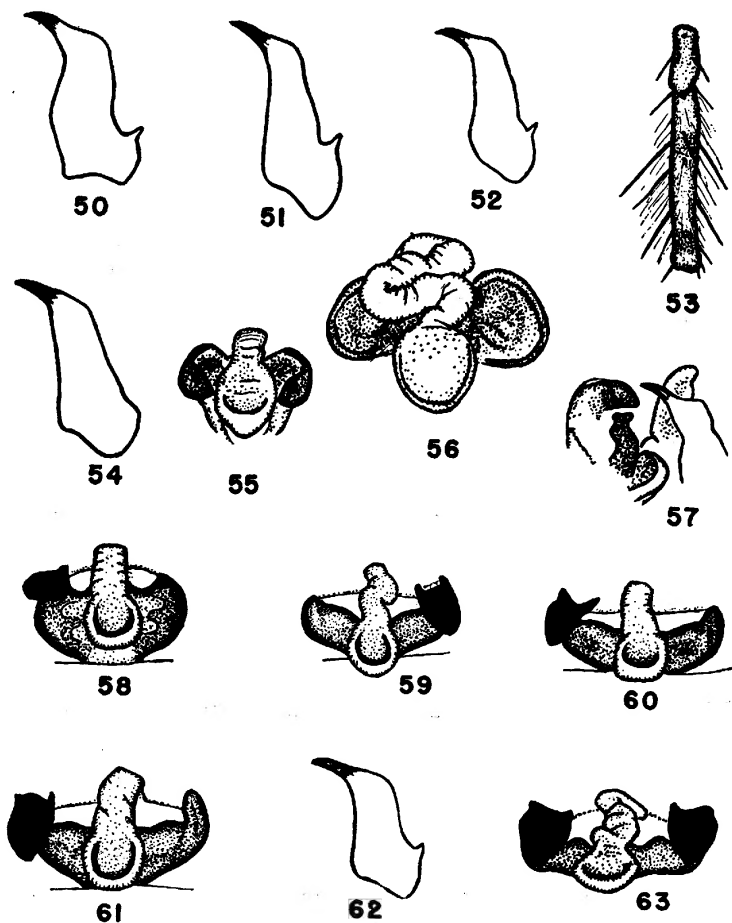


FIG. 50. *Conepeira marilandica*, new species, median apophysis of palpus.

FIG. 51. *Conepeira mumai*, new species, median apophysis of palpus.

FIGS. 52, 55. *Conepeira llano*, new species. 52. Median apophysis of palpus. 55. Epigynum.

FIGS. 53, 59. *Conepeira dawsoni*, new species. 53. Left tibia I of male, ectal view. 59. Epigynum.

FIG. 54. *Conepeira juniperi* (Emerton), median apophysis of palpus.

FIG. 56. *Conepeira glyphica*, new species, epigynum.

FIG. 57. *Conepeira nivosa*, new species, terminal division of palpus.

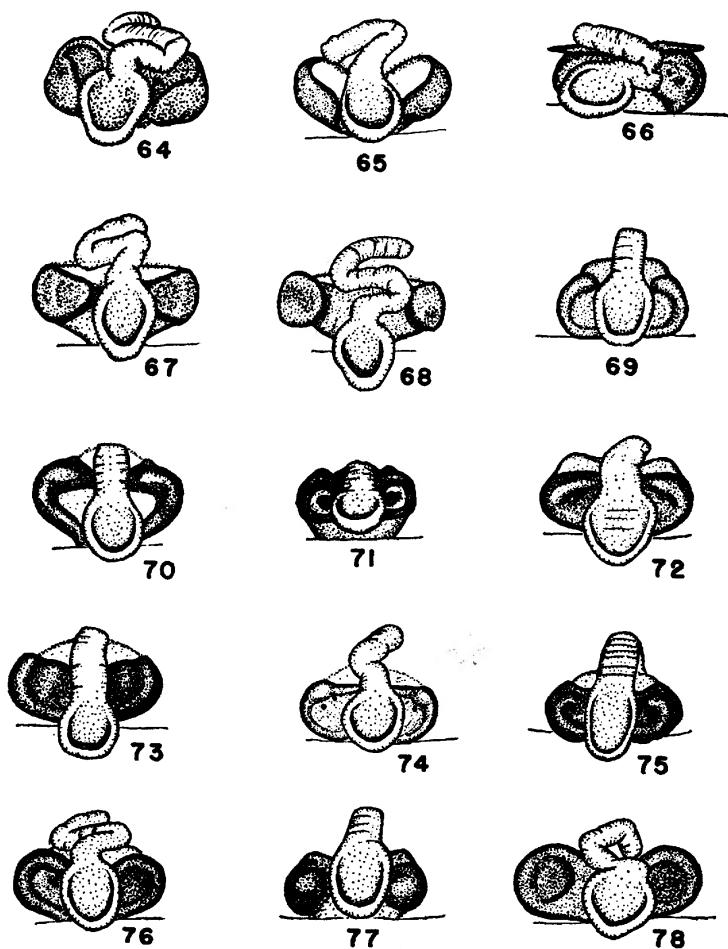
FIG. 58. *Conepeira floridensis* (Banks), epigynum.

FIG. 60. *Conepeira atlantis*, new species, epigynum.

FIG. 61. *Conepeira miniata* (Walckenaer), epigynum.

FIG. 62. *Conepeira innominata*, new species, median apophysis of palpus.

FIG. 63. *Conepeira partita* (Walckenaer), epigynum.



- FIG. 64. *Conepeira mayo* (McCook), epigynum.  
 FIG. 65. *Conepeira nigrofoliata* (Keyserling), epigynum.  
 FIG. 66. *Conepeira forata* (Keyserling), epigynum.  
 FIG. 67. *Conepeira guttulata* (Walckenaer), epigynum.  
 FIG. 68. *Conepeira nivosa*, new species, epigynum.  
 FIG. 69. *Conepeira texana*, new species, epigynum.  
 FIG. 70. *Conepeira bivittata* (Walckenaer), epigynum.  
 FIG. 71. *Conepeira alboventris* (Emerton), epigynum.  
 FIG. 72. *Conepeira marilandica*, new species, epigynum.  
 FIG. 73. *Conepeira mumai*, new species, epigynum.  
 FIG. 74. *Conepeira sarasota*, new species, epigynum.  
 FIG. 75. *Conepeira unica*, new species, epigynum.  
 FIG. 76. *Conepeira ozarkensis*, new species, epigynum.  
 FIG. 77. *Conepeira innominata*, new species, epigynum.  
 FIG. 78. *Conepeira juniperi* (Emerton), epigynum.